Program Planning for Primary Prevention of Child Maltreatment in Wake County

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Advisor

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Reader
Abstract

Children have been mistreated throughout history. Parents and caregivers have committed a host of unspeakable acts against them, including murder, sexual exploitation, forced labor, abandonment and many other forms of brutality. Although such horrors are reprehensible by today's standards, and punishable by law, child maltreatment still exists and often goes undetected. Extensive research, in the last twenty-five years, has revealed many of the predisposing factors associated with child maltreatment and many programs have been implemented nationwide in an effort to prevent maltreatment from occurring. This paper describes a program planning process to develop an evidence-based primary prevention child maltreatment program in Wake County, the second most populous state in North Carolina. Wake County is fortunate to have a number family support programs, including some that serve families after child maltreatment has occurred, but none that are designed to prevent maltreatment. The proposed program will provide community capacity to address child maltreatment before it occurs.
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Introduction

Children have been mistreated throughout history. Parents and caregivers have committed a host of unspeakable acts against them, including murder, sexual exploitation, forced labor, abandonment and many other forms of brutality. Although such horrors are reprehensible by today’s standards, and punishable by law, child maltreatment still exists and often goes undetected. Extensive research, in the last twenty-five years, has revealed many of the predisposing factors associated with child maltreatment and many programs have been implemented nationwide in an effort to prevent maltreatment from occurring. This paper describes a program planning process to develop a child maltreatment primary prevention program that complements existing services for families with risk factors associated with child maltreatment in Wake County, the second most populous county in North Carolina.

Historical background

In the United States, child rearing and discipline were traditionally viewed as private family matters in which parents had absolute authority. Government was very reluctant to legislate or make any intervention on behalf of children. Private citizens were the first to recognize the plight of abused children. Early in the 20th century philanthropic organizations united to form Societies for the Prevention of Cruelty to Children, largely centered in metropolitan areas. Their mission was to address the plight of dependent, neglected and abandoned children as well as those exploited in the child labor system (Rosquist and Krugman, 1999). In 1919, the U.S. government enacted child labor laws, to prevent, or at least ameliorate exploitation of children as cheap laborers in America’s manufacturing workrooms. The Social Security Act (1935) laid the foundation for government to intervene on behalf of children who were exploited, abandoned and orphaned (Rosquist and Krugman). However, none of this
legislation was designed to directly address overt physical abuse. It was not until the 1960s when doctors began to identify a new phenomenon, “the battered child syndrome” that the public became aware that children were being harmed, and even killed, by those who were charged to care for them (Larner, Stevenson and Behrman, 1998). The outcry from the public was enormous and the U. S. Congress responded in 1974 by passing the landmark Child Abuse Prevention and Treatment Act (CAPTA; English, 1998).

The major significance of CAPTA was that it established an official definition of child abuse and prescribed actions that states should take to protect children. CAPTA set minimum definition standards for physical, mental and sexual abuse and neglect. In order to meet this definition it was necessary that the abuse or neglect had to result in some detectable manifestation in the child, such as a broken leg. Merely pushing a child down a flight of stairs would not qualify. In 1996, CAPTA was amended to include the concept of risk of harm in the following language:

The term “child abuse and neglect” means, at a minimum, any recent act or failure to act on the part of a parent or caretaker, which results in death, serious physical or emotional harm, sexual abuse or exploitation, or an act or failure to act which presents an imminent risk of serious harm. (sec. 111.2)

Under this broader definition, many more children would meet the definition standard for abuse or neglect. But under this definition, as under the earlier version, it is up to the states to define the details and implement child protection programs accordingly. In recent years, the term maltreatment has been adopted as a comprehensive term that includes both abuse and neglect, however, the terms abuse and neglect are still widely used to define the type of maltreatment. In
general this paper will use these terms accordingly, except in cases of citing an author/expert who uses the term abuse comprehensively, including concepts of both abuse and neglect.

Extent of the problem

National data.

It is very difficult to determine the true extent of child maltreatment in the United States. This is in part due to the authority delegated to states by CAPTA to establish criteria to investigate and substantiate the occurrence of maltreatment (English, 1998), which has resulted in 51 unique criteria standards nationwide. Although CAPTA was established in 1976, it wasn’t until 1990, when the federal government established the National Center for Child Abuse and Neglect (NCCAN) and its data collection arm, the National Child Abuse and Neglect Data System (NCANDS), that maltreatment information was collected from the states. Under this voluntary reporting system, states submit information about maltreatment collected from their local jurisdictions, namely, counties or parishes. Among the data submitted are the number of children whose caretakers were subjects of an investigation for suspected maltreatment. Investigations are usually initiated as a result of a report made by someone in the community alleging the parent or caretaker’s aggressive or improper conduct towards the child. The number of investigations that determine the allegation of maltreatment to be valid are reported as substantiated maltreatment cases. Data collected from the states show wide variation, especially in the incidence of substantiated maltreatment. For example, in 2003, Pennsylvania reported a substantiated maltreatment rate of 1.6 per 1,000 (children under 18 years) while Alaska reported a rate of 42.2 (U.S. Department of Health and Human Services [DHHS], NCANDS, 2003). Differences in state definitions and criteria for substantiation are a very plausible rationale often used to explain the variance in rates among the states.
Each year, NCANDS produces a summary report of the number of children who have been investigated and substantiated as maltreated. The most recent report, Child Maltreatment 2003: Reports from the States to the National Child Abuse and Neglect Data System (U.S. DHHS, NCANDS, 2003) finds that the rate of investigation (45.9) was the higher in 2003 than in any other year since these data were first collected (1990). In contrast, the rate of substantiated maltreatment reached a peak in 1994 with 1,031,000 children (rate = 15.2) reported as maltreated and declined to a low of 828,000 children (rate = 11.8) reported as maltreated in 1999. From 2000 to 2003, the rate has remained fairly constant ranging from 12.2 to 12.5. In 2003, it was 12.4, one point lower than it was when data were first collected thirteen years ago. Reasons for these trends in the data are unclear, however, the decline in the maltreatment rate after 1996 is somewhat surprising considering that was the year federal legislation broadened the definition to include children who were at risk of harm in addition to those who manifested results of maltreatment, such as broken bones or other visible sequelae. Table 1 presents national annual investigation and maltreatment rates.
Table 1
Child Maltreatment: U.S. rates of investigation and substantiation

<table>
<thead>
<tr>
<th>Year</th>
<th>Investigated rate(^a,b)</th>
<th>Substantiated rate(^a,b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>45.9</td>
<td>12.4</td>
</tr>
<tr>
<td>2002</td>
<td>43.9</td>
<td>12.3</td>
</tr>
<tr>
<td>2001</td>
<td>43.2</td>
<td>12.5</td>
</tr>
<tr>
<td>2000</td>
<td>42.0</td>
<td>12.2</td>
</tr>
<tr>
<td>1999</td>
<td>41.0</td>
<td>11.8</td>
</tr>
<tr>
<td>1998</td>
<td>42.1</td>
<td>12.9</td>
</tr>
<tr>
<td>1997</td>
<td>41.9</td>
<td>13.7</td>
</tr>
<tr>
<td>1996</td>
<td>42.0</td>
<td>14.7</td>
</tr>
<tr>
<td>1995</td>
<td>42.2</td>
<td>14.7</td>
</tr>
<tr>
<td>1994</td>
<td>42.1</td>
<td>15.2</td>
</tr>
<tr>
<td>1993</td>
<td>42.1</td>
<td>15.3</td>
</tr>
<tr>
<td>1992</td>
<td>41.2</td>
<td>15.1</td>
</tr>
<tr>
<td>1991</td>
<td>38.2</td>
<td>14</td>
</tr>
<tr>
<td>1990</td>
<td>36.1</td>
<td>13.4</td>
</tr>
</tbody>
</table>

\(^a\) per 1,000 children 0–17 years  
\(^b\) source: U.S. DHHS, NCCAN, 2003

The National Incidence Study of Child Abuse and Neglect (NIS) is another source of national maltreatment data. CAPTA requires that the NIS be conducted periodically and, to date,
three NIS studies (1980, 1986 and 1993) have been done (Sedlack and Broadhurst, 1996). The NIS uses a sampling method to count the number of children who are maltreated. It includes children who were not reported to official child protective services (CPS) agencies and did not appear in NCANDS reports, as well as some of those who were included.

The most recent study, NIS-3 (1993), used a nationally representative sample that included 42 counties, 842 agencies and 5,612 volunteer professionals who interact regularly with children, including doctors, nurses, teachers, law enforcement officials and others (Sedlack and Broadhurst, 1996). Participating professionals were classified as sentinel reporters for the study, receiving specialized training to recognize the signs of maltreatment. This was followed by three months of being vigilant to recognize signs of maltreatment among the children they saw professionally. The sentinel reporters then submitted data forms documenting maltreatment findings to the National Center for Child Abuse and Neglect, which compiled the sample data to produce the National Incidence Study of Child Abuse and Neglect (NIS-3). Data presented in the NIS are generalizations of the data gathered from the sample population under study.

Sedlack and Broadhurst (1996) found evidence of under-reporting in the official NCANDS data when compared to the NIS-3 findings. Using the relatively stringent definition of maltreatment known as the Harm Standard, the NIS-3 estimated that in 1993 over 1.5 million children were victims of maltreatment in the U.S. To be classified under this standard, children must show physical signs of harm that result from an act of commission or omission by a caregiver. Even using this very strict standard, the NIS-3 estimated the number of maltreated children is more than one and a half times higher than the number of maltreated children reported by the NCANDS for the same year.
The authors also noted that the number of maltreated children had increased significantly since the last incidence study (NIS-2) was done in 1986. Again, using the Harm Standard, the total number of abused and neglected children was two-thirds higher in the 1993 (NIS-3) than it was in 1986 (NIS-2). An increase in the rate of maltreatment from 4.3 in 1986 to 5.7 in 1993 indicates there was a true increase, beyond what would have been anticipated due to an increase in the 0 – 17 population during that time period (Kaplan, Pelcovitz and Labruna, 1999).

The NIS-3 further estimates that CPS agencies investigated only slightly more than one-fourth of the children who were seriously harmed by abuse or neglect. Sedlack and Broadhurst (1996) suggest that the reason for the low CPS investigation rate is that the CPS system had reached its capacity and could not adequately respond to the number of requests that it received. The NIS-3 raises credible concerns that the numbers reported by the official NACANDS report are significantly under-reported.

There is also evidence of under-reporting of child fatality due to abuse. Herman-Giddens et al. (1999) published a retrospective study of 259 child maltreatment homicides that occurred from 1985 to 1994 among North Carolina children younger than 11 years. Autopsies had been performed on all of the children. Researchers examined the Medical Examiner’s records of each of the cases and interviewed law enforcement officials when possible. Herman-Giddens et al. determined that the International Classification of Diseases, Ninth Revision (ICD-9), which was used to classify the child homicides, only allowed classification as death due to maltreatment if the death certificate listed evidence of prior abuse or if the certifier of death specified abuse, beating or other maltreatment. The study concluded that maltreatment accounted for 85% (220) of the child homicides. In contrast, the state vital records system had coded 90 deaths as maltreatment homicides, an under-reporting of 59%. Herman-Giddens et al. suggest that the
under-reporting identified in North Carolina is representative of patterns on the national level as well.

Other studies also document under-reporting of child maltreatment homicides. Ewigman, Kivlahan, and Land (1993) examined deaths of 384 Missouri children under the age of five years, from 1983 through 1986, and found that vital statistics recorded only 48% of definite maltreatment homicides correctly. McClain, Sacks, Froehlke, and Ewigman (1993) expanded the investigation to include children 0 - 17 years over a ten-year time span (1979-1988) and found that 85% of child maltreatment deaths were not coded as such.

Social surveys provide information about the prevalence of maltreatment. The 1985 National Family Violence Survey (NFVS) found that 20 parents per 1,000 admitted to at least one act of violence against their children in the previous year or an estimate of 1.5 million children as victims of an abuse act (Straus and Gelles, as cited in English, 1998). In a 1995 Gallop poll of parents, it was estimated that 3 million children (rate = 44.0) were maltreated by their parents, a rate 16 times higher than in official reports. (Gallop, as cited in English, 1998).

In addition to understanding the number of children affected by maltreatment on the national level, it’s important to determine how different age groups are impacted. The annual NCANDS Child maltreatment reports found that children younger than four years old were the most likely to be maltreated compared to all other age groups, with age being inversely related to the rate of maltreatment (U.S. DHHS, NCCAN, 1995-2003). In contrast, the NIS-3 found lower incidence rates among children age 0-5 (Sedlack and Broadhurst, 1996). The NIS-3 authors speculate that the lower rates are not an accurate representation, but are due to under-coverage and under-reporting of this age group because young children were less observable to sentinel reporters in the community.
North Carolina (NC) and Wake County data.

The North Carolina Child Welfare Central Registry Statistics (North Carolina Department of Health and Human Services [NCDHHS], Division of Social Services [DSS]) reports that the number of children 0-17 years documented as substantiated for maltreatment in North Carolina from 1997 to 2003 ranged from a low of 28,619 (1997) to 32,883 (2002). This is an average of 31,315 annually.

The annual rates of substantiated maltreatment (NCDHHS, DSS, 1997-2003) during the same time period are higher than corresponding national rates (U.S. DHHS, NCCAN, 1997-2003), with North Carolina rates ranging from 2.1 to 5.2 points higher. This difference is more pronounced than is readily apparent. North Carolina uses unduplicated counts of children in calculating its rates. National rates include duplicated counts for children whose families are investigated more than once in a given year. The calculation method used at the national level produces higher rates than the method used in North Carolina, making the discrepancy between the two more disparate. Among the 50 states reporting in 2003, North Carolina had the 16th highest maltreatment rate at 15.7.

Rates of substantiated maltreatment reported by North Carolina’s 100 counties show marked variation. In 2003, substantiated maltreatment rates ranged from a high of 44.1 to a low of 2.9, with a median of 15.6. Unlike states where there are 51 unique definitions for maltreatment, all North Carolina counties use the same definition, which makes the variation among the county rates somewhat surprising. Reasons for the variation are unclear.

The North Carolina Child Welfare Central Registry Statistics (NCDHHS, DSS) reports that the number of children 0-17 years documented as substantiated for maltreatment in Wake County from 1997 to 2003 ranged from a low of 594 (2001) to 1,039 (2002) with an average of
877 children maltreated annually. Rates of substantiated maltreatment in Wake County are significantly lower than those for the state. The average rate in North Carolina was 16.2 compared to 5.5 in Wake County (NCDHHS, DSS, 1997-2003) from 1997 to 2003.

Wake County’s rate of substantiated maltreatment is also low when compared to similar size North Carolina counties. North Carolina groups counties of similar characteristics together by levels, with larger counties grouped in higher levels. Wake is the second most populated county in North Carolina and is classified as a level III county, along with 10 other counties. Among level III counties, Wake County ranked 10th of eleven in rate (4.90) of substantiated maltreatment, but was tied for 6th place ranking in the number (890) of children substantiated as maltreated in 2003.

In a statewide comparison of the same time frame, Wake County ranks 95th of 100 counties in rate of substantiated maltreatment and 97th in rate of children investigated for maltreatment (18.6) but it is tied for 7th place ranking in the number of children substantiated as maltreated (NCDHHS, DSS, 2003). Table 2 presents U.S., North Carolina and Wake County substantiated maltreatment rates.
Table 2
Child Maltreatment: U.S., North Carolina and Wake County rates of substantiation

<table>
<thead>
<tr>
<th>Year</th>
<th>U.S.</th>
<th>NC</th>
<th>Wake County</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>12.4</td>
<td>14.5</td>
<td>4.9</td>
</tr>
<tr>
<td>2002</td>
<td>12.3</td>
<td>16.2</td>
<td>5.9</td>
</tr>
<tr>
<td>2001</td>
<td>12.5</td>
<td>16.3</td>
<td>3.5</td>
</tr>
<tr>
<td>2000</td>
<td>12.2</td>
<td>16.2</td>
<td>5.4</td>
</tr>
<tr>
<td>1999</td>
<td>11.8</td>
<td>17.0</td>
<td>6.6</td>
</tr>
<tr>
<td>1998</td>
<td>12.9</td>
<td>16.8</td>
<td>6.9</td>
</tr>
<tr>
<td>1997</td>
<td>13.7</td>
<td>15.8</td>
<td>5.3</td>
</tr>
</tbody>
</table>

*a per 1,000 children 0 – 17 years
*b source: U.S. DHHS, NCCAN, 2003
*c source: NCDHHS, DSS, 1997-2003

Maltreatment impact on populations by age at the state and county level is similar to that reported nationwide. In North Carolina, youngest children are reported to have the highest rate of maltreatment. Using population estimates by age group (NCOSBM, Data Services Unit, 1997-2003), the average rate of maltreatment of children 0 – 6 years is 23.7 compared to 12.0 for children 7 – 12 years and 13.6 for children 13 – 18 years (NCDHHS, DSS; NCD). During the same time period, calculations for children in Wake County also show that the youngest children have a higher average rate of maltreatment. For children 0 – 6 years, the rate is highest (5.6) and for children 7 - 12 it is lowest (4.1); children 13 - 18 are between the other two at a rate of 4.9. Table 3 provides the number of children substantiated for maltreatment and the rates of maltreatment by year in Wake County.
Table 3
Wake County substantiated maltreatment: number and rates of children 0 – 6 years

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of children</th>
<th>Rate*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>412</td>
<td>6.5</td>
</tr>
<tr>
<td>2002</td>
<td>465</td>
<td>7.7</td>
</tr>
<tr>
<td>2001</td>
<td>278</td>
<td>4.8</td>
</tr>
<tr>
<td>2000</td>
<td>414</td>
<td>7.5</td>
</tr>
<tr>
<td>1999</td>
<td>481</td>
<td>9.1</td>
</tr>
<tr>
<td>1998</td>
<td>495</td>
<td>9.7</td>
</tr>
<tr>
<td>1997</td>
<td>383</td>
<td>7.7</td>
</tr>
</tbody>
</table>

*Per 1,000 children 0 – 6 years

Analysis of the extent of the problem.

It is difficult to understand the extent of maltreatment in this county. The official record, NCCAN’s Child Maltreatment: Reports from the states to the National Child Abuse and Neglect Data System, indicates that approximately one million children a year are maltreated. The National Incidence Study and selected national surveys indicate that official numbers may be under-reported. There is also evidence that maltreatment homicides are under-reported.

In examining maltreatment data for North Carolina, it is readily apparent that the rate of substantiated maltreatment is significantly higher than the national rate. Although the higher rate appears to indicate a higher incidence of child maltreatment in North Carolina, this may not be the case. Because states have responsibility to allocate resources to provide and maintain child protective services, comparisons across the 51 states are not equitable. States allocating more resources to investigation of alleged maltreatment may identify more maltreated children than those with fewer resources allocated to investigation. English (1996) states that child protective agencies that are under-resourced must prioritize services for children judged to be in most imminent danger and that others are screened out and not served. States also have wide
discretion to establish standards for the definition of child maltreatment. Under broader
definitions, more children can qualify and the rate may increase; under narrower definitions,
fewer children can qualify and the rate may decrease.

Wake County maltreatment data also warrant analysis beyond what they might initially
suggest. Wake County has an extremely low maltreatment rate, compared to other counties in
North Carolina. From 1997 to 2003, the 0 – 17 population in Wake County grew by 30% from
approximately 140,000 to 182,000 (NCOSBM, State Data Center, 1997-2003). At the same time
the number of children substantiated for maltreatment did not trend in an upwards direction, as
would be expected, given the population growth. Substantiated maltreatment actually decreased
from 1998 through 2000, followed by two years of increase (2001-2002) and then a decline in
2003. Exhibit 1 illustrates these findings. This trend can also be seen in Table 2.

Rapid growth in the child population puts strain on county services, especially the need
for schools. It is possible that resources were diverted from child protection efforts to other areas
and limiting the county’s ability to investigate and substantiate cases of maltreatment. There is
some evidence that this may have been the case in Wake County. In 2004, the North Carolina
Department of Health and Human Services (NCDHHS) awarded Wake County over $300,000 to
fund six additional child protective case managers, as a result of NCDHHS’ analysis that Wake
County child protective case managers had excessively high caseloads and needed additional
staff (Wake County Human Services, Child Protective Services, 2004).

Contributing factors

An abundance of literature exists about factors that are associated with child
maltreatment. Research has identified a number of factors that are associated with incidence of
maltreatment but sorting through them is not straightforward. There is little agreement among
researchers regarding which risk factors are most highly associated with maltreatment. Meta-analysis of the body of research done in this area could provide valuable information but it appears that little is available. Searches of Medline, CINAHL, ERIC and PsycInfo for meta-analyses of factors contributing to occurrence of child maltreatment produced no true meta-analytic studies but did identify one extensive literature review with analysis and one longitudinal analysis of risk factors.

Wilson, Reid, Midmer, Biringer, Carroll and Stewart (1996) conducted a systematic review of the literature to determine association between prenatal psychosocial risk factors and negative postpartum outcomes, such as child maltreatment. Reviewers examined 118 articles that contained a total of 129 prenatal risk factors. They found that child maltreatment was most strongly correlated with a lack of social support, recent life stressors, maternal psychiatric disturbance, unwanted pregnancy, childhood violence in the mother or her partner, poor relationship between the mother and her parents, maternal low self-esteem and lack of attendance at prenatal classes. Child Maltreatment was associated, to a lesser degree, with marital dissatisfaction, current or past abuse of the mother and alcohol or drug abuse by the mother or her partner. Because this study was limited to psychosocial risk factors, demographic factors such as age, income and education were not addressed.

Brown, Cohen, Johnson and Salinger (1998) conducted a prospective longitudinal study of a randomly selected sample of 644 families in upstate New York from 1975 to 1992. Mothers and children were periodically interviewed over the 17-year study period for prevalence of any of the thirty-nine preselected potential risk factors. After children reached the age of 18, they self-reported incidence of maltreatment. Interview data were matched with New York State maltreatment records. Logistical regression analysis indicated which risk factors preceded
occurrence of physical abuse, sexual abuse and/or neglect. Researchers found that young maternal age and maternal sociopathy (drug, alcohol or police involvement) were the only two risk factors associated with all forms of maltreatment - physical abuse, sexual abuse and neglect. Other risk factors found to highly correlate with maltreatment include: low income, low maternal education, single parent, poverty, maternal dissatisfaction, maternal low self esteem, maternal drug use, police involvement and low father involvement. Brown et al. also found that the prevalence of maltreatment increased from 3% with no risk factors to 24% when four or more risk factors were present.

After consideration of these two studies, young maternal age was selected as a risk factor for further investigation. Brown et al. found young maternal age to be associated with all forms of abuse and while Wilson et al. did not include demographic risk, they did identify many risk factors that often occur in teen mothers, such as unwanted pregnancy, life stressors and poor relationship with parents.

Stier, Leventhal, Berg, Johnson and Mezger (1993) conducted a retrospective longitudinal study of 219 children born to inner city mothers who were 18 years or younger. Study subjects were matched with 219 sociodemographically similar comparison children born to mothers 19 years or older. Medical experts, one of whom was blinded to the group status, reviewed each documented injury before the child’s fifth birthday. Researchers found that more children (12.8%) born to mothers in the younger group sustained an injury that was judged to be have been intentional than children in the comparison group (6.4%) (risk ratio = 2.0; 95% CI, 1.17 - 3.64).

Dukewich, Borkowski and Whitman (1996) conducted a less rigorous, non-controlled prospective longitudinal study of 75 pregnant and parenting teen mothers. Researchers assessed
subjects for risk at three points: prenatally, six months postnatally and one year postnatally. Various self-report instruments were used to rate the mothers’ risk in five areas: social supports, psychological adjustment, preparation for parenting, predisposition for aggressive coping and infants’ temperaments. Mothers’ abuse potential was also assessed and rated in a similar manner. Risk factors were examined together as predictors of maternal child abuse potential and given a composite score. Regression analysis revealed a significant relationship between risk and potential for abuse, leading the researchers to conclude that the risk composite was predictive of mothers’ potential for abuse. They found that the mothers’ risk in preparation for parenting, including knowledge and attitudes about child development, was the strongest predictor of abuse potential. Researchers found child’s temperament to be marginally significant in predicting abuse potential. Maternal coping style acted as a mediator on both of these risks. Social support and psychological adjustment risks were not found to be predictive.

Flanagan, Coll, Andreozzi and Riggs (1995) conducted a small observational cohort study of 47 socio-economically disadvantaged teen mothers and their infants. All infants were full term. Forty-five mother-infant pairs were followed for two years. One-third (14) of the infants were reported to child protective services and were substantiated for maltreatment.

Keenan, Runyan, Marshall, Nocera, Merten and Sinal (2003) conducted a prospective study of North Carolina children aged two-years or younger who were admitted to a pediatric intensive care unit for traumatic brain injury in 2000 and 2001. Of those admitted it was determined which children had suffered intentional injury, verified by confession or determination of abuse by a medical and social agency investigation. A total of 152 cases of traumatic brain injury were identified, with 81 (53%) determined to have been intentional injuries. Multivariate logistical regression analysis used to compare children intentionally injured
children with children in the general population found that an increased risk for intentional injury in children born to mothers 21-years or younger, non-European American or if there were multiple births.

Early maternal age was found to be a significant risk factor associated with child fatality by Overpeck, Brenner, Tremble, Trifoliate and Breeds (1998). Their study analyzed birth and death certificate data between 1983 and 1991 to determine risk factors associated with the 2,776 infant (less than one year) homicides during that time. Overpeck et al. concluded that childbearing at an early age was strongly associated with infant homicide. The strongest risk factor was second or subsequent birth to a mother less than 17 years old (relative risk, 10.9) or 17 to 19 years old (relative risk, 9.3), compared with first birth to mother 25 years or older. Other significant findings include: maternal age of less than 15 years (relative risk, 6.8) compared with age 25 years, no prenatal care (relative risk, 10.4) compared with early prenatal care and less than a high school education among mothers who were at least 17 years old (relative risk, 8.0) compared with 16 or more years of education.

Rumm, Cummings, Krauss, Bell, and Rivara, (2000) found that young parental age, in the presence of spouse abuse, increases the risk for child maltreatment. This cohort study used centralized database information of the U.S. Army to determine families where spouse abuse had occurred. These families were then followed for over two million person-years for incidence of child maltreatment. Families that had experienced spouse abuse were twice as likely to have a substantiated incident of child abuse (rate ratio, 2.0). In families with the youngest parental age, less than 25 years, the risk for abuse increased to almost five times (rate ratio, 4.9) that of military families without spouse abuse. Most (74.8%) episodes of child maltreatment occurred
within two years of the spouse abuse. The researchers conclude that spouse abuse appears to increase the risk for child maltreatment.

Windham, Rosenberg, Fuddy, McFarlane, Sia and Duggan (2004) conducted a longitudinal controlled evaluation of 643 high risk families enrolled in an early home visitation program in Hawaii. Families remained in the program for three years. Generalized estimating equations were used to determine association between dependent and independent variables. Physical abuse was associated with maternal depression and partner violence and child characteristic of small for gestational age (SGA). Assault to the child's self esteem was significantly associated with maternal depression, maternal illicit drug use partner violence and mother's perception of the child's demand level. Unlike many previous studies, maternal age, education, parity and income level were not associated with maltreatment. Also unlike many previous studies these results are based solely on information that participants were willing to disclose and not on official reports of maltreatment. Analysis of official reports of maltreatment may have identified different risk factor associations.

Social-ecological factors were also explored to provide more context. Coulton, Korbin and Su (1999) used an ecological framework to understand how neighborhood and individual characteristics are associated with child maltreatment. Four hundred parents of children under the age of 18 were systematically selected from 20 randomly selected census tracts. Parents completed standards tests to measure both individual characteristics as well as their perceptions of the environmental characteristics of their neighborhoods. Analysis showed that neighborhood characteristics such as poverty and lack of child care were associated with risk for child maltreatment. Child protective agency records were not reviewed. These findings are consistent with those of an earlier study by the same authors (Coulton, Korbin and Su, 1995), in which
poverty, child care burden, instability and isolation were positively associated with maltreatment. An earlier study by Drake and Pandey (1996) compared official maltreatment rates with census data and also found that poverty is strongly correlated with neglect maltreatment.

**Consequences of the problem**

Kaplan, Pelcovitz and Labruna (1999) conducted a review of maltreatment literature from 1988 to 1998 for consequences of physical and emotional abuse and neglect that victim children experience as they grow older. They found numerous and extremely varied consequences but believe that extensive research done in the last decade consistently identifies the following consequences of physical maltreatment: a large number of interpersonal, cognitive, emotional, behavioral and substance abuse problems and psychiatric disorders. In reviewing the data regarding psychiatric consequences, they determined that approximately eight percent of children and adolescents documented as physically abused have current diagnoses of major depressive disorder, approximately 40% have a diagnosis of a major depressive disorder during their lifetime, and, at least 30% are diagnosed with disruptive disorders (oppositional defiant disorder or conduct disorder) during their lifetime.

Felitti et al. (1998) studied the relationship of childhood maltreatment and household dysfunction to adverse health outcomes in adults. Researchers conducted a survey of 13,494 adults who completed a standard physical examination at a large health maintenance organization (HMO); 9,508 (70.5%) responded. The questionnaire included questions about exposure to adverse childhood experiences (ACEs): emotional, physical or sexual maltreatment, substance abuse, mental illness, mother treated violently and criminal behavior. More than half of respondents reported exposure to least one category of ACE; one-fourth reported exposure to more than two categories. Researchers found that as the number of ACEs increase, risk of the
following health problems also increase: alcoholism, liver disease, depression, illicit drug use, intimate partner violence, smoking, chronic obstructive lung disease (COPD), suicide attempts, ischemic heart disease and unintended pregnancies. Although this study did not report adverse health outcomes for maltreatment ACEs, the other ACEs under study often coexist in families where maltreatment occurs. For this reason, the adverse health outcomes identified in this study can be considered as potential consequences for maltreatment.

In addition to the long-term sequela of maltreatment, the burden of short-term consequences must be considered. Herman-Giddens et al. (1999); Ewigman et al. (1993) and McClain et al. (1993) document the most acute and tragic consequence of homicide death. Traumatic brain injuries, if not fatal, can leave the victim with residual effects of brain damage with disability related to the extent and area of injury, including blindness, cognitive impairment, seizures and speech/language impairments and others.

Exhibit 2 presents a diagram of risk factors contributing to child maltreatment. As the literature summarized above indicates, many diverse risk factors have been identified as contributing to the problem of maltreatment. These risk factors are interrelated to each other and in their contribution to the problem but in ways that are not completely understood. A socio-ecological framework was selected for presenting the problem analysis because it is well suited to display the interconnectedness and diversity of the risk factors. Individual risk factors are grouped as direct contributors to the problem and family and community risk factors as indirect contributors.

*Strategies to address the problem*

Because the factors that cause child maltreatment are so complex and strategies to prevent its occurrence are not readily apparent, a literature review was done to determine
intervention strategies that have been shown to be most effective. A preliminary review found the number of publications, especially journal articles, documenting implementation of strategies to prevent child maltreatment in the last 25 years is staggering. It was also apparent that the methods used to determine effectiveness were varied. A few used the best-practice research approach of a randomized controlled design. Others used the less rigorous quasi-experimental design and most used a non-experimental design, such as use of pre/post testing, focus groups or case studies but with no comparison or control group. In recent years, a number of researchers have attempted to determine effectiveness of various strategies by conducting meta-analyses of child abuse prevention literature. Due to the limited scope of this paper, a review of meta-analysis literature, rather than individual studies was conducted in order to determine the types of programs demonstrating the most effectiveness in preventing child maltreatment.

Medline, CINAHL and Psycinfo were searched for meta-analytic reviews of effectiveness of child maltreatment primary prevention programs. Six reviews were found; one was eliminated because it included a number of programs designed to prevent recidivism or secondary prevention of maltreatment. Review was conducted on the five remaining studies (Geeraert, Van den Noortgate, Grietens, and Onghena, 2004; U.S. Department of Health and Human Services [DHHS], Centers for Disease Control and Prevention [CDC], Task Force on Community Preventive Services, 2003; MacLeod and Nelson, 2000; Guterman, 1997; Roberts, Kramer, Suissa, 1996). To be included, all studies had to be meta-analytical, using accepted statistical calculations to determine overall effect of the programs reviewed. In this case, the desired effect is prevention of child maltreatment. The majority of programs included in the selected meta-analyses were home visitation programs, as these programs have shown promise in prevention of maltreatment and because they have undergone some of the most rigorous
evaluation of effectiveness using randomized controlled designs. Individual studies included in the five selected meta-analyses used all of the three evaluation designs described (randomized control, quasi experimental and non-experimental). Researchers identified evaluation study designs included in each of the five meta-analyses.

Geeraet, Noortgate, Grietens, & Onghena (2004) included 40 program sites in their analysis, with multiple site implementations for the Healthy Families America (17), and Nurse Home Visitor (2) models. Criteria for acceptance included program evaluation design using control group comparison or pre- and post-test design. In addition, programs had to focus on primary prevention of child maltreatment for families deemed to be at-risk and initiated before the child’s birth or before the third birthday. Researchers defined outcomes as direct, i.e., abuse reports to child protective services agencies or evidence of injury or neglect, such as emergency room visits or hospitalizations. No distinction was made between reported or substantiated reports of abuse. Indirect outcomes or proxy measures were also included, such as improved parent-child interactions, as measure by standardized tests. The total mean effect size for direct outcomes, i.e., abuse reduction was 0.26, and 0.29 for indirect outcomes, such as improved family or parent-child functioning. Thirty-eight of the 40 program sites used home visiting; two provided rooming-in after birth. All sites reported using professionals, while 31 sites reported using paraprofessionals also.

In October' 2003, the Center for Disease Control and Prevention (CDC) devoted one of its weekly Morbidity and Mortality Reports to feature its assessment of the effectiveness of strategies for preventing violence, including early childhood home visitation programs. Authors of this report, the CDC’s Task Force on Community Preventive Services, examined the effects of 22 studies of early childhood home visitation programs to prevent primary child maltreatment.
Criteria for acceptance included program evaluation design that compared outcomes in groups not exposed, or less exposed, to the intervention. In addition, programs had to focus on preventing child maltreatment through home visitation services that began before the child’s birth or sometime before the second birthday. Outcomes assessed were reported and substantiated incidents of maltreatment, hospitalizations or emergency room visits for injury or ingestions and out-of-home placements. The overall effect was determined to be approximately 40% reduction in child maltreatment compared to control groups. Benefits were assessed in both direct reports of abuse or neglect as well as indirectly by occurrence of injury or ingestion. Programs delivered by nurses showed a median reduction in child maltreatment of 48.7%; programs delivered by mental health worked showed a 44.5% reduction and those delivered by paraprofessionals showed a 17.7% reduction but his group had the widest interquartile range, 41.2% to 65.7%.

MacLeod and Nelson (2000) analyzed 56 studies for effectiveness in promoting family wellness and preventing child maltreatment. Various service strategies were included: home visiting, intensive family preservation, mass media parental support and others. Only studies using a prospective controlled design, measured maltreatment outcomes such as reports to child protective services or measured family wellness through administration of standardized testing instruments were included. Children up to 12 years of age were the required target population. The 56 studies were grouped into eight categories for analysis. The overall weighted effect size was 0.41 or 66% in excess of those for the control groups. The range for weighted mean effects for eight study categories was 0.13 – 0.61, with the reactive social support/mutual aid studies yielding the highest mean effect. Multi-component studies were slightly lower (0.58) and home visiting studies were the third lowest (0.41). The researchers note that the second and third
highest study categories share two commonalities; they are both proactive and begin prenatally or shortly after birth, suggesting that the earlier the intervention begins the better.

Guterman (2000) examined the efficacy of universal versus targeted early childhood home visitation to prevent child maltreatment. Inclusion criteria were use of controlled evaluation design, primary prevention focus and measurement of explicit outcomes (maltreatment reports) and proxy measures (parental nurturance, attachment behaviors, discipline, etc.). Nineteen studies met the criteria and were included in the analysis. For consistency, effect sizes were calculated using data collected at the first follow-up data collection point. Twelve of the 19 studies used population-based enrollment and seven used screening-based enrollment. The weighted mean effect size for population-based studies with explicit outcome measures was 3.72% with a range of -3.9% to 8.3%; for screening-based studies with explicit measures the weighted mean effect size was -0.7% with a range of -4.6% to 1.8%. A subgroup of studies by Olds, Henderson, Chamberlin, et al., (1986) had an effect size of 15.0%. The weighted mean effect size for population-based studies using proxy outcome measures was .092 with a range of .000 to .475 and for screening-based studies using proxy outcome measures .020 with a range of .000 to .279. Guterman notes that although this analysis indicates positive effect sizes for all groups in prevention of child abuse, population-based approaches in lieu of target approaches have greater impact.

Roberts, Kramer and Suissa (1996) considered two categories of outcomes: those that measured reports of abuse, neglect or out-of-home placements and those that measured number of injuries. Studies including testing to measure improved indirect measures, such as approaches to parenting, parent-child interactions, were excluded. Additional inclusion criteria were: use of a control group and random or quasi-random (e.g., assignment by alternating file numbers) group
assignment and postnatal home visits. Eleven studies met these criteria and were included in the analysis. Odds ratios were calculated for each study and then aggregated to produce a variance-weighted average odds ratio. Eight studies measuring injury outcomes yielded an average odds ratio of 0.98 (0.62 to 1.53). Researchers suggested that “surveillance bias” exists among the studies measuring abuse outcomes with families who are visited receiving closer scrutiny by in-home visitors mandated to report suspected maltreatment to authorities. They considered this such a serious threat to validity that they decided not to calculate or publish aggregate ratios for outcomes gathered from child protective reports of abuse and neglect. Table 4 summarizes calculations to demonstrate the impact of child maltreatment prevention efforts.

Table 4
Outcome Measures of Child Maltreatment Prevention

<table>
<thead>
<tr>
<th>Authors</th>
<th>Direct(^d)</th>
<th>Indirect(^b)</th>
<th>Direct &amp; Indirect(^c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaeraert et al. (2004)</td>
<td>0.26(^d)</td>
<td>0.29(^d)</td>
<td>0.29(^d)</td>
</tr>
<tr>
<td>Guterman (1997)</td>
<td>0.04(^d)</td>
<td>0.09(^d)</td>
<td>NA(^e)</td>
</tr>
<tr>
<td>MacLeod &amp; Nelson (2000)</td>
<td>NA(^e)</td>
<td>NA(^e)</td>
<td>0.41(^d)</td>
</tr>
</tbody>
</table>

Percent reduction

| U.S. DHHS, CDC, Task Force on Community Preventive Services (2003) | NA\(^e\) | NA\(^e\) | 40% |

Pooled odds ratio

| Roberts et al. (1996) | 0.98\(^e\) | NA\(^e\) | NA\(^e\) |

\(^a\) Child abuse and neglect reports submitted to child protective services organizations and hospital records for injury

\(^b\) Measures obtained through use of a standardized tool, such as the Home Inventory, or Family Stress Index

\(^c\) Combination of \(a\) and \(b\)

\(^d\) Total mean weighted effect size

\(^e\) Not available

\(^f\) Pooled odds ratio for injury-only events

This literature review demonstrates that home visitation programs have produced some of the strongest outcomes measures of maltreatment prevention. Needs assessment will be based on
early childhood home visitation programs to prevent maltreatment. Exhibit 5 presents the studies included in the five meta-analyses.

Needs assessment

Normative need.

In order to develop a primary prevention program for child maltreatment, it is necessary to assess the needs of the community where the program will be implemented. Assessment of normative needs compares existing services which address a problem to standards that indicate what services should be available. This is a straightforward process when assessing services for which a professional or governing body has set standards, such as the number of acute care hospital beds that should be available in a community of a given size. Standards for the number or type of services to prevent child maltreatment have not been set; however, a statewide task force was recently convened to address issues such as this. Through a grant from the Duke Endowment, Prevent Child Abuse North Carolina and the North Carolina Institute of Medicine formed the Task Force on Child Abuse Prevention. In their report, New Directions for North Carolina: A report of the NC Institute of Medicine Task Force on Child Abuse Prevention, September, 2005, they made a total of 37 recommendations. Thirteen were deemed priority recommendations. The following priority recommendations, if adopted, would establish a normative framework for child maltreatment prevention efforts. In order to provide leadership to prevention efforts, the task force recommends that the NC General Assembly establish a standing Child Maltreatment Prevention Legislative Oversight Council. They also recommend that the Department of Health and Social Services develop a data collection system for monitoring child abuse prevention. Such a system could be used to establish a baseline against which future efforts could be measured. The task force also recommends that public and private agencies
prioritize funding programs that are theory-based and incorporate elements identified in research literature as critical elements of effective programs. The task force also recommends an additional tax on birth and marriage certificates and/or an income tax check box for donation to the NC Children’s Trust Fund to support maltreatment prevention efforts. Although the final disposition of the task force’s recommendations will not be decided for some time, the interest that community leaders have shown in participation on the task force demonstrates the community’s will to take action to prevent child maltreatment. See Exhibit 3 for a roster of task force participants.

Adoption of the task force’s recommendations would certainly provide direction, coordination and possibly funding for child abuse prevention efforts. However, there are existing services in Wake County that provide services to young children and their families that must be considered in identifying need for future services. An inventory of home-based support services for families with young children was completed in 2001 (Nelson) and recently updated through informal survey of community agencies reveals there are 23 programs that provide services to families with young children, often in their homes. A review of that listing (Exhibit 4) demonstrates that the majority of programs are funded with county and state funds; most of them are administered by the Wake County Human Services. These include maternal care coordinators (MCCs) and maternal outreach workers (MOWs) who visit high risk prenatal and postpartum clients, child service coordinators (CSCs) who provide developmental screening and family support for families with young children at risk for developmental delay and early interventionists, occupational, physical and speech therapists who provide therapeutic services for children with special needs in their most natural environments – oftentimes the home. Wake County Human Services also provides child protective services – investigations for allegations of
maltreatment, support and treatment for those recovering from maltreatment and foster care for children who need out-of-home placements.

Wake County Smart Start provides funding for family support home visiting programs for families with limited resources. These include the Parents as Teachers model, which provides home-based parent education in emergent literacy and learning experiences for young children, other programs provide support for families who are recent immigrants, mental health counseling for families with young children experiencing significant behavioral concerns, and others. Although these programs provide services that support development and strengthening of families’ abilities to parent their children, none of the programs is designed to prevent child maltreatment. None use program models that have been rigorously evaluated and found to prevent maltreatment. All programs funded by Wake County Smart Start are required to complete a program evaluation plan. Improvement in parenting skills is measured by survey of participant parents who report if program participation improved their parenting knowledge and feelings of parental competence. Unfortunately, these are very weak measures and provide little indication of the actual effectiveness of the programs.

Perceived need.

Perceived need is what people think or feel their needs are. Potential consumers of a service can provide valuable insight regarding the types of services they want and will access. In the case of preventing child abuse, the potential consumers must not be considered nor approached as potential abusers by professionals who will provide the service but as consumers of family support or enrichment services. A focus group of mothers receiving home visiting services by child service coordinators (CSCs) from Wake County Human Services was asked what they liked about the visits; they reported that it was helpful to have the CSCs guide them in
navigating the complex human services system to get services they needed. Mothers also reported that the visitors made them feel supported and less isolated. Both of these services - connection to resources and support - can be interpreted as perceived need. They are the things that the teen-age mothers thought were valuable and should be considered in program development.

There appears to be perception of need from the general public in Wake County for child maltreatment efforts. Wake County records indicate that segments of the public had requested increased efforts to protect the county’s children. A child protective staffing report of October 2004 states, “Judges, educators and concerned citizens asked that the county pursue a more aggressive practice of investigation. As a result, the rate [of investigation] increased from 58% in 2001 to 76% in 2004. The change in practice has been vindicated by a concomitant increase in the number of cases where the report of neglect and/or abuse was substantiated…. from 12% to 16%” (Wake County Human Services, Child Protective Services, 2004). The number of child protective investigations and substantiations had decreased to its lowest rate in recent years (3.5) and it appeared that the public may have expressed concern that more services and case workers were needed. It is not clear if a highly visible child maltreatment or homicide incident had triggered the public’s call for more protective services, which is often the case.

Expressed need.

Expressed need is measured by demand for a service. For example, working parents who are eligible for subsidies to help pay the cost of child care often cannot access subsidies because the demand is so high that a waiting list has to be established. Although waitlists are less common for prevention and support services, the healthy Mothers Healthy Babies agency reported that in a community meeting in March 2004 that several adolescent mothers had to wait
for services to begin when their home visitors had full caseloads and could not accept new clients, indicating expressed need for the service. Because “community survey after community survey has provided sufficient data to demonstrate that expressed need or demand statistics represent only the tip of the need iceberg” (Kettner, Moroney and Martin, 1999, p. 41), it is plausible to believe that more Wake County mothers under the age of 20 years would participate in home visiting services, if services were available.

Relative need.

Relative need is measured as the gap in services comparing one location to another or comparing one population to another. Within Wake County, the existing family support programs most often target families who have limited resources or have special needs such as a child with a disability or recovery from abusive parenting practices. This approach is acceptable because resources are limited and therefore are targeted to families who need them the most. In comparing Wake County to other large NC counties, some other counties have funding to provide evidence-based, rigorously evaluated effective maltreatment programs. For example, Guilford County has a grant from the Robert Wood Johnson Foundation to provide the Nurse Family Partnership program, which provides early childhood home visitation to first-time young mothers and has demonstrated effectiveness in preventing maltreatment using scientific controlled evaluation methods.

Analysis of need.

There is no standard for the types or number of services that should be available for the prevention of child maltreatment. This is true across the state. The NC Institute of Medicine has convened a task force and made recommendations that will provide a framework for prevention standards, but this process is evolving and has not been completed. A review of the types of
services that are available in Wake County to provide parental support and education identifies 23 programs. Although parent support and education are good strategies to prevent child maltreatment, none of the existing programs is using an evidence-based model of service delivery or is using strong evaluation processes to determine program outcomes, including prevention of maltreatment.

Teen mothers participating in a focus group identified connection to needed services and support that helps them feel less isolated as benefits from participation in the home-based CSC program. These benefits can be understood as perceived needs. There is no survey of focus group data available from parents who were not already participating in a home visiting program and no assessment can be made. There is also evidence of perceived need in the general Wake County public who called for more child protection services as noted in a Wake County report.

There is some evidence of expressed need by teen mothers who had to wait for home visiting service from the Healthy Mothers Healthy Babies agency, which may be interpreted as representative of a larger unexpressed need for such a service. In assessing relative need, there are other communities both in North Carolina and in other states that are utilizing stronger prevention models, such as the Family Nurse Partnership model.

Program models

The five meta-analyses reviewed for this paper calculated positive effectiveness values for child maltreatment outcomes (Table 4) of home visitation programs to provide family support and primary prevention of child maltreatment. Professional organizations and experts in various fields serving young children provide guidance regarding development of programs to prevent child maltreatment.
The American Academy of Pediatrics and the Canadian Task Force on Preventive Health Care have both issued statements in support of early childhood home visitation programs to prevent child maltreatment (AAP, 1998; MacMillan and Canadian Task Force on Preventive Health Care, 2000). The AAP (1998) provides specific recommendations regarding program development: focus on families in greater need; begin services prenatally and continue through the second to fifth year of life; adjust services to meet individual family needs; provide health promotion instead of focusing solely on social support; address the full complement of family needs and use nurses or well trained paraprofessionals. Recommendations issued by MacMillan and the Canadian Task Force on Preventive Health Care (2000) are very similar.

Experts outside the medical community have issued recommendations as well. Gomby, Culross and Behrman (1999) recommend that home visitation interventions should focus on educating and changing parents’ behavior, that staff skill should be appropriate for the intervention and that home visits should be combined with center-based group care for children. Johnson (2001) recommends that program objectives and outcomes be realistic and not over-promise results; that services be integrated with existing community services and that home visiting services be one service available in a continuum of early childhood services. Olds (as cited in the American Academy of Pediatrics [AAP], Council on Child and Adolescent Health, 1998) recommends that the empirical evidence about the types of programs that have been shown to be effective be considered in developing local programs. The NC Institute of Medicine’s Task Force on Child Abuse Prevention (2005) recommends that, “Public and private funders should place priority on funding evidence-based and promising child maltreatment prevention and family strengthening programs” (p.88).
A total of 54 research studies (exhibit 5) were included in the five analyses reviewed for strategies to prevent child maltreatment. Many offer promising results, such as the study done at Johns Hopkins University (Hardy and Street, 1989). This was a randomized clinical trial in which the intervention group of inner-city low-income mothers improved compliance with well-child care, had fewer illness visits and hospitalizations and less child abuse and neglect substantiations. Although the results are impressive, it has limitations that make it a poor choice for replication in a local program. The study was completed over 10 years ago, no further work has been published by these researchers to validate these results and study researchers may no longer be available to share materials or to give support to replication of the program. A number of studies had similar limitations (Brooten, Kumar, Brown, Butts, Finklet, Bakewell-Sachs, et al., 1986; Dawson, van Doorninck & Robinson, 1989; Gray, Cutler, Dean, Kempe, 1979) and were not selected as a model for the proposed program. Others were eliminated because they were very small studies (Black, Prasanna, Kight, Wachtel, Roby, & Schuler, 1994; Affleck, Tennen, Rowe, Roscher & Walker, 1989; Mulsow & Murry, 1996) and others because they did not use randomized controlled research designs (Gray, Spruway, & McClatchey, 2001; Cerny & Inouye, 2001; Flynn, 1999). Some failed to produce significant results under randomized controlled study (Barkauskas, 1983; Barth, 1991; Duggan, McFarlane, Windham, Rohde, Salkever, Fuddy, Rosenberg et al., 1999; and Infant-Rivard, Filion, Baumgarten, Bourassa, Labelle, & Messier, 1989) or were not focused on primary prevention (Brayden, Altemeier, Dietrich, Ticker, Christensen, McLaughlin, & Sherrod, 1993;) and were also eliminated from consideration for the proposed program.

Although other studies were strong and showed promise (Armstrong, Fraser, Dadds, Morris, 1999; Britner & Reppucci, 1997; Marchenko & Spence, 1994) none were as rigorously
studied as the work done by Olds (Olds, Eckenrode, Henderson, Kitzman, Powers, Cole, Sidors, et al., 1997; Olds, Henderson, Chamberlain, & Tatelbaum, 1986; Olds, Henderson, Cole, Eckenrode, Kitzman, Luckey, Pettitt, et al., 1998; Olds, Henderson, Tatelbaum, & Chamberlain, 1986; Olds, Hill, Robinson, Song, & Little, 2000; and Olds & Kitzman, 1993) and Kitzman (Kitzman, Yoos, Cole, Korfmacher, & Hanks, 1997; Kitzman, Olds, Henderson, Hanks, Cole, Tatelbaum, McConnochie et al., 1997; and Kitzman, Yoos, Cole, Korfmacher, & Hanks, 1997). Their program model stands out for producing the most consistent child maltreatment prevention results over time. This model was tested in three randomized controlled trials in: Elmira, New York (1978), Memphis, Tennessee (1990) and in Boulder, Colorado (1994). Outcomes have been consistently good. The Elmira study (Olds, et al., 1997) produced promising results early in the study but the most significant effects were not observed until the fifteen-year follow-up. Mothers who received visits in comparison with the control group demonstrated fewer child abuse and neglect substantiations (0.29 vs. 0.54, $p = .001$), longer intervals between first and second pregnancies (37 vs. 65 months, $p = .001$) and fewer behavioral impairments due to use of alcohol and other drugs (0.41 vs. 0.73, $p = .03$). Perhaps more impressive were effects seen in the children in the Elmira study (Olds, et al., 1998) when they became teenagers, they had fewer arrests (0.20 vs. 0.45, $p = .03$) and smoked fewer cigarettes per day (1.09 vs. 2.49, $p = .03$), compared to those whose parent(s) were in the control group.

The Memphis study (Olds, et al., 2004) produced the following effects at the six year follow up, comparing the mothers who received the nurse visits with those who did not: longer intervals between first and second births (34.3 vs. 30.2 months, $p \leq .05$), longer relationships with current partners (54.4 vs. 45.0 months, $p \leq .05$) and children who had fewer behavior problems in the borderline or clinical range (score of 88.6 vs. 85.4, $p \leq .05$). Results from the
study conducted in Colorado are preliminary, as this is the newest site. In a four-year follow-up (Olds et al., 2004), it was found that mothers who were visited by nurses compared with the control group had a longer interval between first and second pregnancies (24.5 vs. 20.4 months, \( p \leq .05 \)) and less domestic violence (6.9% vs. 13.6%, \( p \leq .05 \)).

In addition to strong programmatic evaluation outcomes, analysis of costs of the NFP program is also positive. The Washington State Institute for Public Policy ([WSIPP], 2004) conducted cost-benefit analyses on sixty prevention and early intervention programs. The WSIPP concluded that the Olds model costs a little over $9,000 per child and yields net benefits (benefits minus cost) of over $17,000 per child. Benefits measured include prevention of child abuse, substance abuse and crime. For reasons of effectiveness demonstrated over time in three different studies and cost-benefit, the program developed by Olds and associates is selected as the model for program development.

*Proposed program*

The Nurse Family Partnership website provides the developmental history of the Olds model. Satisfied that the three randomized trials produced positive effects, Olds and associates convened a small team of public health policy, nursing, education and program evaluation professionals to serve as an advisory/oversight committee to guide implementation of the model in new sites nationwide. The first six sites were started in 1996 (Los Angeles, Fresno and Oakland, CA, Clearwater, FL, St. Louis, MO and Oklahoma City, OK) with funding from the Office of Juvenile Justice and Delinquency Prevention. In 2000, the advisory/oversight committee became the Nurse-Family Partnership (NFP), an initiative of the National Center for Children, Families and Communities. The NFP became a non-profit organization in 2003 and currently provides support to over 150 sites in 20 states.
In order to receive support from the NFP initiative, interested sites must submit an application and meet certain criteria, which include: need for NFP services and the presence of other programs serving the same client demographics, adequate number of low-income first-time births in the catchment area (at least 100 families per year is the usual minimum), sound financing plan, experience of the applicant with innovative programs, ability to coordinate with existing health and human services programs, ability to hire and retain qualified registered nurses and ability to establish a highly effective referral process into the program. The new Wake County program will apply to become an official NFP site and its ability to meet required criteria will be discussed in the following components of the program.

*Target population.*

The new program will be called the Wake Nurse Family Partnership Program. It will target low-income young women and their partners who are preparing to give birth to, or have recently delivered their first child. In Wake County, the number of children born to young mothers (less than 20 years old) has trended in an upward direction since 1999, with an average of 648 births annually and a high of 704 in 2004. Approximately 70% of births to women under the age of twenty are first-time births or an average of 454 annually since 1999. Alternatively, approximately 30% of births to the youngest mothers (under 20 years) are second or subsequent births or an average of 193 annually. It is hoped that the Wake NFP program will support teen mothers to delay subsequent births, as has been demonstrated in the Olds model. Table 5 presents total, first-time and subsequent number of births to women 13 to 19 years old in Wake County and Exhibit 6 presents the same information in a graphic format.
### Table 5
Wake County births to women 13 to 19 years

<table>
<thead>
<tr>
<th>Year</th>
<th>Total # births</th>
<th># and % first-time births</th>
<th># and % second and subsequent births</th>
</tr>
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<td>1999</td>
<td>633</td>
<td>441 (70%)</td>
<td>192 (30%)</td>
</tr>
<tr>
<td>2000</td>
<td>609</td>
<td>419 (69%)</td>
<td>190 (31%)</td>
</tr>
<tr>
<td>2001</td>
<td>648</td>
<td>450 (69%)</td>
<td>198 (31%)</td>
</tr>
<tr>
<td>2002</td>
<td>648</td>
<td>452 (70%)</td>
<td>196 (30%)</td>
</tr>
<tr>
<td>2003</td>
<td>643</td>
<td>454 (71%)</td>
<td>189 (29%)</td>
</tr>
<tr>
<td>2004</td>
<td>704</td>
<td>509 (72%)</td>
<td>195 (28%)</td>
</tr>
</tbody>
</table>

*Source: NCDHHS, SCHS, 1999-2004*

National data provides insight regarding how many women under the age of twenty are low-income, as indicated by Medicaid payments for delivery. Medicaid funds more than one-third of all deliveries in the United States and as many as two-thirds of deliveries to women under the age of 20 years (Gavin, Kuo, Adams, Alao, & Gilbert, 2004). If these data are applied to Wake County births, up to 434 births annually would be to low-income women under the age of 20 years.

The national NFP program targets first-time low-income mothers and their partners. The Wake County NFP program will prioritize enrollment of young low-income first-time parents. With an annual average of 454 first-time births to teen mothers, many expected to be low-income, there appears to be sufficient numbers to meet the NFP program enrollment goal of enrollment of 100 families on an ongoing basis.

**Services.**

Typically, parents-to-be will be enrolled during the second trimester of pregnancy or within ten weeks after giving birth. Referrals into the program will come from Wake County or
WakeMed Medical Center prenatal clinics. These clinics serve the majority of low-income pregnant women in the county. A public health outreach nurse is assigned to visit these clinics at least weekly to receive referrals of high-risk women to the state-funded Maternal Care Coordination program. The public health nurse will be trained to offer The Wake NFP program to prenatal clients who meet the enrollment criteria.

There is a similar outreach and referral process in the postpartum units and newborn nurseries, including the neonatal intensive care unit, at WakeMed Medical Center. The outreach public health nurse will offer the Wake NFP program to mothers who meet the criteria for eligibility and have delivered their infants. Having established referral processes with prenatal and post partum clients will assure a reliable referral process into the new Wake NFP program.

Once enrolled, women will receive home visits by a registered nurse. Visits will occur weekly for the first 4 weeks after enrollment to support relationship development and will decrease to once every other week until delivery, when they will become weekly for four weeks in order to assist with adjustment to infant care. Visits are then scheduled every other week until the child reaches 21 months of age when they decrease to monthly in anticipation of discharge from the program. In all cases, the nurse will try to identify the enrolled woman’s support person(s) and to engage the support person(s) in the visiting process and program content.

The FNP program has suggested activities for each visit but nurses vary activities depending on the needs of the family. Nurses attempt to develop a health alliance with mothers to promote healthy maternal and child outcomes. The nurse also engages in problem solving with parents and setting small achievable goals that will allow parents to experience success and, gain confidence in their new parenting roles, leading to a sense of mastery over their future. Parenting education designed to address parents’ interests and learning styles is also provided as well as
connection to community health, education and social services. Efforts are also made to assist parents to establish social supports and networks (Kitzman, H., Korfmacher, J and Hanks, C., 1997).

**Collaboration with community programs.**

The NFP program will be delivered by Wake County Human Services, an integrated agency that incorporates the functions of a typical county health department and social services agency. This agency is selected because it has experience in its Maternal Care Coordination (MCC) program to serve high risk prenatal women and in its Child Service Coordination (CSC) program to serve high risk young children and families as well as strong outreach and referral processes to engage these populations. Integrating the Wake NFP program with the MCC and CSC programs will be a natural fit. The NFP program will provide specialized services to its target population of young, low-income, first-time parents, who would have been referred to Wake County Human Services for MCC or CSC services prior to start-up of the NFP program. Housing the new NFP program along with staff of the MCC and CSC programs will allow integration and coordination of services for families, who will be triaged to the most appropriate service to meet their unique needs and circumstances.

The NFP program will have a unique and strong relationship with the child care subsidy program. Families participating in the NFP program will be able to access high quality child care in four- or five-star child care centers or family care homes. Substantial evidence exists documenting the contribution that high quality early learning environments provide young children (Phillips & Adams, 2001), which makes the availability of this service an asset to both parents and children. Parents are able to work or attend school with peace of mind that their children are receiving good care and children benefit socially and cognitively from rich learning
environments. Wake County Smart Start (WCSS) provides funding to pay for child care subsidies but there is always a waitlist of up to a year’s duration. WCSS will make parents in the NFP program a priority population who will receive child care subsidy immediately upon application; they will not have to be placed on the waitlist. Having stable childcare will allow parents to either continue their education or maintain employment, which will assist them to become self sufficient.

Staff qualifications.

Staff will be nurses with a bachelor’s degree in nursing (BSN) and 5 years of experience in maternal, pediatric and/or public health nursing or equivalent combination of education and experience. Each nurse will be assigned a caseload of 20 to 25 families. There will be one full-time nurse supervisor responsible for a staff of four BSNs. The supervisor will have a nursing degree (masters preferred) and 10 years experience in maternal, pediatric or public health nursing, or equivalent combination of education and experience.

Funding sources.

Wake County Smart Start’s (WCSS’s) mission is school readiness for children; preventing child maltreatment and supporting parenting align directly with its mission. WCSS will be the primary funding source for the NFP program, with some revenue to be generated by billing North Carolina Medicaid for certain services that the NFP nurses will provide. Medicaid considers activities such as assessment of family needs, connecting families to community resources and parent education as service coordination, a reimbursable service. These are fundamental activities of the NFP program that will allow the program to access Medicaid as a second source of revenue. WCSS funding will pay for approximately 75% of the program and Medicaid reimbursement will provide the remaining 25%.
Implementation Plan

The NFP program will begin operation next fiscal year, July 1, 2006. This will allow time for Wake County Human Services (WCHS) to apply to become an official site of the national NFP center prior to program start up. WCHS will begin recruiting NFP program staff in May 2006 by advertising in local newspapers and nursing publications. The positions will also be posted internally at WCHS and it is hoped that some of the experienced public health nursing staff from the MCC or CSC programs will apply for NFP program positions. Once hired, staff will attend training in Denver, CO in order to be oriented to NFP program processes and philosophy. Trained staff will begin marketing and advertising the service. They will meet with hospital discharge staff, staff in prenatal and pediatric clinics, local pediatricians, high school principles and other community sites that will be potential referral sources. The program will begin accepting referrals in October 2006 but it is not anticipated that each nurse will have a full caseload of 20 to 25 families until January 2007.

Program Evaluation

A full program evaluation plan will be developed with support from the national NFP office. See exhibit 7 for program goals, hypotheses and objectives. Exhibit 8 presents program counts and outcomes that will be tracked. Most of the first year outcomes will be process outcomes. In years two and three, impact outcome measures that need to be tracked over time will be added for participants who have been in the program long enough.

Program Budget

The annual program budget is presented in exhibit 9. Costs are projected to be almost $300,000 annually to support 4 full time equivalents (FTEs) case manger nurses who will each
carry a caseload of 20 to 25 families and one FTE nursing supervisor who will carry a small case load of 10 to 15 families, in addition to having supervisory responsibility for the team.

**Conclusion**

This purpose of this paper is to present a systematic process for planning a program for primary prevention of child maltreatment in a large county in North Carolina. The first step was to examine the incidence and prevalence of child maltreatment, which found strong evidence of under-reporting in the official systems that track this information at the national, state and local levels. Although this indication that child maltreatment is more pervasive than the official data suggest, it is encouraging that efforts, such as the North Carolina Institute of Medicine’s Task Force on Child Abuse Prevention are taking responsibility to champion and guide prevention efforts. Until now, efforts have been focused on treatment after abuse had occurred. Certainly, prevention is the intervention of choice to control such a serious threat to children’s health.

Examination of the risk factors contributing to child maltreatment found them to be numerous and complex. Although many studies have been conducted that show correlation between risk and occurrence of maltreatment, the research is not conclusive regarding which factors, or combination of factors, have the highest probability for occurrence of maltreatment. A literature search to locate meta-analyses of existing research in this area found very little. This is an area that warrants such analysis, considering the valuable insight it could shed on factors contributing to this very complex problem.

In contrast to the lack of analysis of risk factors for abuse, recent and sophisticated analysis of program effectiveness in preventing maltreatment is providing valuable information, including some surprises. The Healthy Families America model, which showed promise in early studies, did not demonstrate effectiveness under more rigorous research methods. Fortunately,
other programs continue to show promise even in randomized controlled trials. One of these programs was selected as a model for development of the proposed program.

It is encouraging that scientific research methods are being used to determine which strategies are most effective and that programs are being developed that incorporate tested strategies. Public and private funding sources are becoming more aware of what research is revealing and are requiring that programs use evidence-based models in program development. Using the best scientific research available to design effective interventions to prevent child maltreatment is particularly important because children’s welfare is at stake. The body of research in child abuse prevention is growing and will need to continue to grow and to be used in prevention efforts if child maltreatment is to be eradicated.
References

(References marked with an asterisk indicate studies included in meta-analyses.)


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North Carolina Office of State Budget and Management (NC OSBM), Data Services


Exhibit 1
Wake County: # Maltreated and Population Growth

- # Maltreated
- Population 0-17
Exhibit 2
Analysis of Health Problem: Child Maltreatment

Direct Contributing Factors (Individual)
- Young maternal age
- Alcohol and/or substance abuse
- Maternal psychiatric disturbances
- Maternal low level of education
- Inappropriate expectations of child development
- Inadequate knowledge about child development
- Negative characteristics: anger, dissatisfaction, etc.
- Maternal low self-esteem
- Limited cognitive ability
- Unwanted pregnancy

Indirect Contributing Factors (Family & Community)
- Single parenthood
- Non-supportive family
- Low father involvement
- Maternal abusive/violent childhood events
- Family conflict/violence
- Recent life stressors

Risk Factors
- Parent/Caregiver prone to violence and/or unable to provide adequate care

Health Problem
- Unacceptable number of maltreated children

Consequences
- Death
- Impaired cognitive skills
- Poor school performance
- Aggression
- Inhibited social skills
- Emotional and behavior problems
- Delinquency
- Depression
- Psychiatric disorders

Vulnerable Child
- Child with special needs - including preemies
- Child’s temperament, E.G., irritability
- Young child less than 4 years old
- Female child